A RARE *DIDYMIUM* FROM MEXICO (MYXOMYCETES)

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ABSTRACT — Three collections of a rare *Didymium* species were found on decaying desert vegetation (*Agave shawii* Engelm. and *Yucca* sp.) in Baja California, Mexico. A detailed description, including SEM-micrographs, is given for this new species. *Didymium mexicanum* is distinguished by its characteristic spore ornamentation.

KEY WORDS: Baja California, Mexico, *Didymium mexicanum*, Myxomycetes, scanning electron microscopy, taxonomy.

RÉSUMÉ — Trois récoltes d'une espèce rare de *Dydimium* ont été réalisées sur débris végétaux (*Agave shawii* Engelm. and *Yucca* sp.) dans le désert de Baja California (Mexique). Cette nouvelle espèce, *Dydimium mexicanum*, est décrite, après observation au microscope électronique à balayage. Elle se caractérise notamment par l'ornementation des spores.

MOTS-CLEFS — Baja California, Mexique, *Dydimium mexicanum*, Myxomycètes, microscopie électronique à balayage, taxonomie.

Only sixteen species of Myxomycetes have been recorded from Baja California Peninsula (Ogata *et al.*, 1994; Lizarrága *et al.*, 1997a; Moreno *et al.*, 1997; Lizarrága *et al.*, 1998). Our forays in this area have recorded a rich myxobiota on the vascular flora.

The first photographs are presented here for *Didymium mexicanum*, a new species that was published in the abstract volume of the Second International Congress on the Systematics and Ecology of Myxomycetes celebrated in Madrid in April of 1996 (Lizarrága *et al.*, 1996). This species was collected three times in different localities on decaying desert vegetation.

Baja California represents mediterranean and desertic areas of interest for biodiversity in Myxomycetes. These study areas are compared to other similar areas in the iberian Peninsula. We have observed that species described in California, have appeared in Europe and this is the case for *Didymium clavodecus* Whitney, (Lizarrága *et al.*, 1997b). *Didymium subreticulosporum* Oltra *et al.*, initially was described in Europe and later found abundantly in Baja California (Lizarrága *et al.*, 1998).

DESCRIPTION

Didymium mexicanum G. Moreno, Lizárraga & Illana, *in* Lizárraga, G. Moreno, Illana & Castillo, *Abstr. 2nd. Intern. Congr. Syst. Ecol. Myxomycetes*: 56. 1996.(Figs. 1-13)

Material studied. Didymium mexicanum. MEXICO: Baja California. Cataviña-Bahía de los Angeles highway (near Cataviña), on decayed stalk of *Agave schawii*, 14-II-1993, G. Moreno, M. Lizárraga and C. Illana (Holotype AH 18481, Isotype in herbario Nannenga-Bremekamp n° 17.311). Road to Valle Las Palmas, Rancho Los Alisos, Tijuana, on decayed stalk of *Yucca sp*, 13-XI-1994, M. Lizárraga & E.J. Torres (AH 17100). Road San Vicente-Erendira, cerro Solo, on decayed stalk of *Agave schawii*, 15-II-1996, M. Lizárraga (AH 19976).

Material studied of other species. Didymium clavodecus. MEXICO: Baja California. Tecate-Mexicali highway (Cañada Verde), on leaves of *Quercus agrifolia* Nee., 6-II-1993, M. Lizárraga, G. Moreno and C. Illana, AH 15927.

Didymium dubium. SPAIN: Guadalajara, on stem of *Cortaderia argentea*, 24-VI-1992, A. Castillo, AH 14884.

Etymology. In reference to its discovery on desert vegetation in Mexico.

Sporangia and plasmodiocarps scattered or in small groups; sporangia 0,2-1,5 mm diam., subglobose pulvinate or discoid, sessile or rarely on short stalks; plasmodiocarps discoid, pulvinate or elongate-depressed, 1 × 3-20 mm diam., lightly grooved above; stalks if present, very short, stout, calcareous, white; hypothallus scanty, pale violet; peridium single, membranous, iridescent, sprinkled with prismatic and stellate calcareous crystals, smaller than the spores; dehiscence irregular; columella none; capillitium abundant, threads delicate and free, up to 1 µm wide, sparingly branched, with very few cross bars, ends forked, pale brown, with some dark rounded or funnel-shaped swellings up to 3 µm diam.; spores (13-)14-16(-18) µm in diam., dark purple brown in mass, purple brown by transmitted light, polygonal in optical section, with strong ridges, bearing warts united laterally in ▪ reticulum; the spore wall ornamentation as seen by SEM shows vertical processes that interconnect, without a free space underneath; plasmodium unknown.

The holotype has been deposited in the Herbarium of the Departamento de Biología Vegetal (Botánica), Universidad de Alcalá de Henares, Spain (AH). The isotype remains in the private collection of Nannenga Bremekamp in BR.

The fructifications of *Didymium mexicanum* resemble other members of the genus that have sessile sporangia and plasmodiocarps with stellate calcareous crystals sprinkled on the peridium. This species cannot be confused with any of the previously described species because of its spore morphology.

Didymium mexicanum is perhaps most closely related to *Didymium clavodecus* Whitney and *D. dubium* Rostaf., due to similarly shaped sporangia with scattered crystals. The spore morphology of *D. clavodecus* is represented by capitate warts (1-1,5 µm in length), occasionally fusing into short ridges (Fig. 15) (Whitney, 1979). The fructifications of *D. dubium* are similar to those of *D. mexicanum*, but the capillitium of the former is more elastic and the spores lack bands or ridges, and the ornamentation is characterized by fine warts and small delicate ridges which sometimes form a broken reticulum (Fig. 14) (Nannenga-Bremekamp, 1991).

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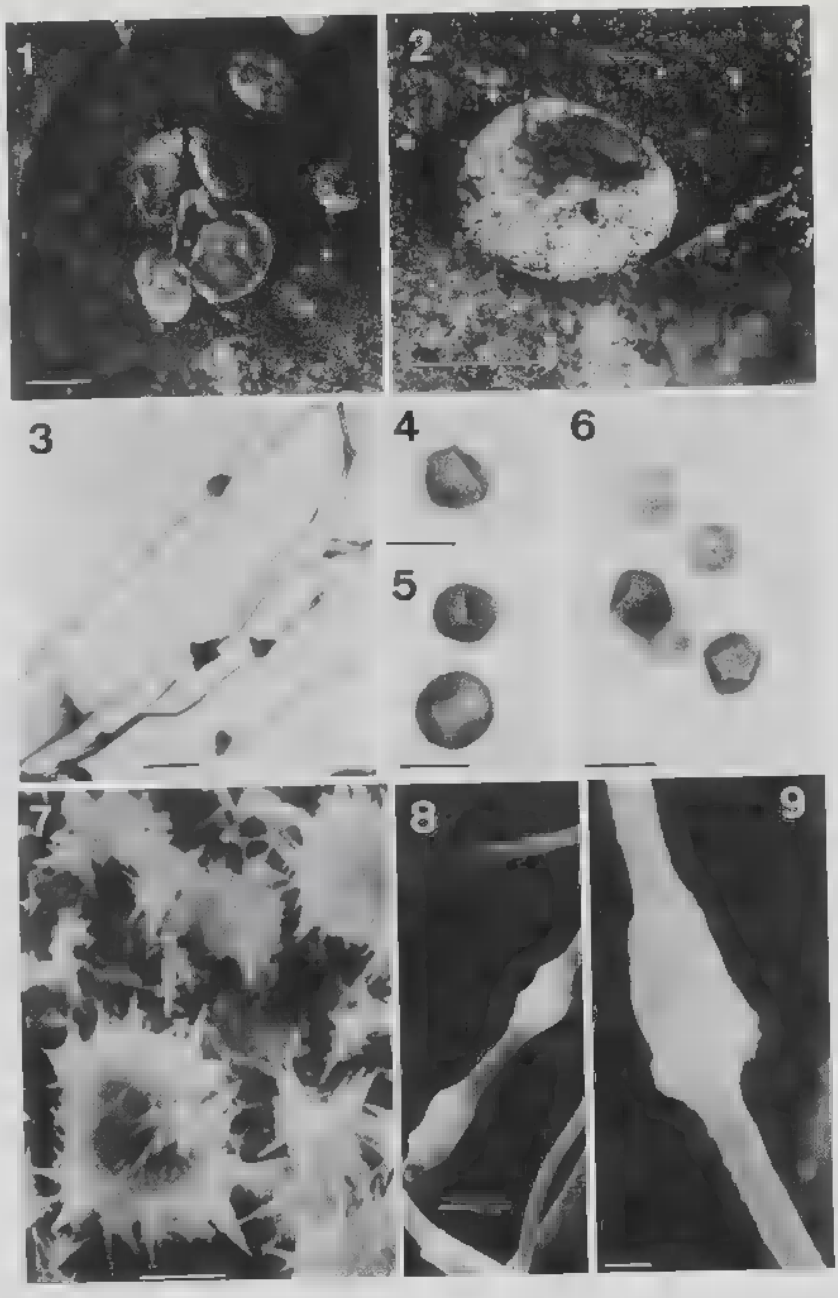
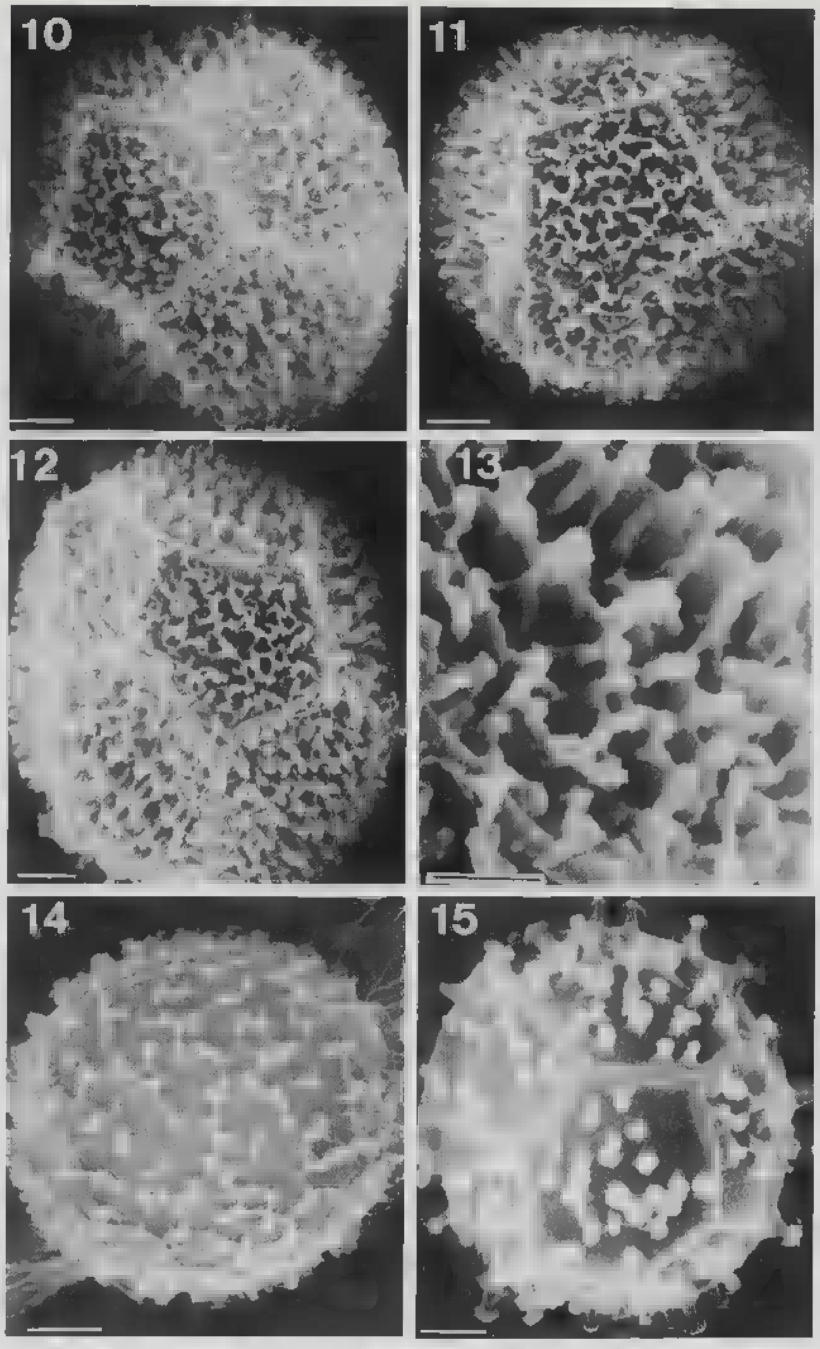


Figs. 1-9. — *Didymium mexicanum*, AH 18481, holotype. Fig. 1. Habit, Fig. 2. Sessile sporangia with calcareous crystals scattered on the peridium. Fig. 3. Photomicrograph of capillitial threads with pigmented swellings. Figs. 4-6. Optical section of angular spores. Fig. 7. SEM of stellate calcareous crystals of the peridium. Figs. 8-9. SEM of capillitial threads with swellings. Scale bars: Figs. 1-2 = 1 mm, Figs. 3-6 = 10 µm, Figs. 7-8 = 5 µm, Fig. 9 = 1 µm.

Figs. 1-9.— *Didymium mexicanum*, AH 18481, holotype. Fig. 1. Aspect général, Fig. 2. Sporange sessile avec cristaux calcaires recouvrant le peridium. Fig. 3. Filaments du capillitium à épaississements pigmentés. Figs. 4-6. Spores anguleuses. Fig. 7. Cristaux calcaires étoilés du peridium (MEB). Figs. 8-9. Épaississements des filaments du capilittium (MEB). Echelle: FIGS. 1-2 = 1 mm, Figs. 3-6 = 10 µm, Figs. 7-8 = 5 µm, Fig. 9 = 1 µm.



Figs. 10-13.— *Didymium mexicanum*, AH 18481, holotype. Figs. 10-12. SEM of spores. Fig. 13. SEM of spore surface ornamentation. FIG. 14. *Didymium dubium*, AH 14884. SEM of spore ornamentation. Fig. 15. *Didymium clavodecus*, AH 15927. SEM of spore ornamentation. Scale bars: Figs. 10-12 = 2 µm, FIG. 13 = 1 µm, Figs. 14-15 = 2 µm.

Figs. 10-13. — *Didymium mexicanum*, AH 18481, holotype. Figs. 10-12. Spores (MEB). Fig. 13. Ornementation sporale (MEB). FIG. 14. *Didymium dubium*, AH 14884. Ornementation sporale (MEB). FIG. 15. *Didymium clavodecus*, AH 15927. Ornementation sporale (MEB). Echelle: Figs. 10-12 = 2 µm, FIG. 13 = 1 µm, Figs. 14-15 = 2 µm.